Remarks

Claims 1-20 are pending in the application. Claims 1-20 were rejected. Claims 15 and 16 are amended for consistency with claim 1. Claim 1 is the independent claim. Reconsideration of the amended application is respectfully requested.

The examiner rejected claim 1-10, 13, 19, and 20 under 35 USC §102(b) as being anticipated by Prokoski et al.

Independent claim 1 recites a method for determining the suitability of a digitized image of a person for person identification. According to the claimed method, the image of a person is segmented into a background area and a head or face area. The head or face area is analyzed to determine at least one characteristic value. The at least one characteristic value is compared with at least one predetermined threshold value. The suitability determination is made, based on the result of the threshold comparison.

Thus, according to claim 1, a method is recited for determining whether an image of a person is suitable to be used in an automatic identification process. This determination is an important factor in the identification process, as the quality of images used can play a large role as to whether a valid comparison can be made when attempting to identify a person. See the specification on page 2 at lines 11-16. A determination ahead of time as to whether the image is suitable for later identification use avoids problems later when the actual identification process must be relied on. The claimed invention addresses this issue by providing a method of making this determination. See, for example, the specification on page 3 at lines 18-20.

In contrast, Prokoski et al. disclose a method for identifying individuals from an analysis of elemental shapes derived from biosensor data. Prokoski et al. thus provide a biometric solution to image identification, generating a thermal image of a subject, which is processed to produce a digital representation. The digital representation is not a digitized image of the subject, but rather is a matrix of pixels, wherein each pixel corresponds with a level of thermal energy of a corresponding portion of the representation. See Prokoski et al. at column 3, lines 19-37 and column 5, lines 38-51.

Prokoski et al. describe an enrolment process during which a valid reference image is generated with respect to a subject. See column 5, lines 32-51. It is during this enrolment process that a suitability determination such as that recited in claim 1 would be performed. However, Prokoski et al. are silent as to making such a suitability determination. When later making an actual identification determination, a correlation threshold is used. See column 7, line 56 through column 8, line 35. At this point, thermal imaging representations of a reference image and a captured image are cross-correlated, and the result is compared to a threshold in order to make an identification determination. However, this is not a suitability determination, as recited in claim 1. When making the identification determination, suitability is necessarily presumed. Prokoski et al. assume that the thermal imaging process will produce a reliable reference image, which in turn presumes a level of suitability of the reference image. See column 1, line 67 through column 2, line 17.

Thus, where claim 1 recites a suitability determination based on a single image, Prokoski et al. disclose a comparison of two images. Both methods use thresholds, but

whereas the method of claim 1 uses a threshold value in making the suitability determination with respect to a single image, Prokoski et al. use a threshold to make an identification determination with respect to two images. The Prokoski et al. system could benefit from the use of the claimed suitability determination, but the reference itself does not disclose or suggest its use.

The examiner stated that claim 1 is not limited in scope to use of a single image, and that the use of two images falls within the scope of the claim language. It is true that the method of claim 1 can be used to process multiple images. However, the language of claim 1 inherently limits the application of the claimed method to a single image, and does not allow the use of two images in the sense that Prokoski et al. do. Unlike the Prokoski et al. process, the claimed method can process, for example, two images, but the analysis of the first image does not require the second image. Prokoski et al. require two images for a comparison step, whereas the claimed method only requires a predetermined threshold against which to compare a characteristic value from an image.

That is, according to the claimed method, the suitability of a digitized image to be used in an identification process is determined. The suitability of more than one image can be determined, but applying the claimed method to one image is completely independent of application of the claimed method to another image. Each image is analyzed to determine a characteristic value, which is compared with a threshold value.

In contrast, Prokoski et al. requires two images for the comparison, which in any case is not a suitability determination comparison as claimed, but rather is an identification comparison. That is, Prokoski et al. perform a correlation-based

comparison against a reference sample. Unlike the claimed method, this Prokoski et al. process is not predictive for suitability for identification, but is the identification process itself. See column 3, lines 19-21.

Because the claimed method determines suitability of an image for identification, it is an image quality determination, whereas the Prokoski et al. process is merely an identification process. According to the Prokoski et al. process, two low-quality samples can produce a high correlation value due to low absolute differences, and therefore a positive identification can be made according to this process even if the sample images are not of high enough quality to be used in making a reliable comparison. That is, Prokoski et al. provides a process in which a good-quality sample of a first individual produces a high identification score when compared to a second, different good-quality sample of the first individual. However, the Prokoski et al. process can also produce a high identification score when a low-quality sample of a first individual is compared to a low-quality sample of a second individual. The claimed method does not allow the latter case to happen, and the Prokoski et al. process also would not allow that scenario to occur if it included the claimed method. If the Prokoski et al. process did in fact include the claimed method, all samples used would have a suitable quality, when compared against a predetermined threshold. Then, a good-quality sample of a first individual would produce a low identification score when compared to a good-quality sample of a second, different individual.

Furthermore, the Prokoski et al. process is open to security risks because it reveals biometric match scores during quality assessment. This can allow attacks to systems in

which a person improves the quality of a target image to make it more similar to the reference image. If the claimed method were included as part of the Prokoski et al. process, the noted potential problems would be avoided. The Prokoski et al. process does not include the claimed method, and could benefit from the claimed method, as the claimed suitability method would improve the validity and reliability of the Prokoski et al. identification process.

In summary, the Prokoski et al. process does not include the claimed method, but rather exposes problems in the prior art that are overcome by the claimed invention.

For at least the reasons noted above, it is submitted that Prokoski et al. do not anticipate the invention as recited in claim 1. Claims 2-10, 13, 19, and 20 depend from claim 1, and therefore also are not anticipated by Prokoski et al. The rejection of claims 1-10, 13, 19, and 20, therefore, should be withdrawn.

The examiner rejected claims 11, 12, and 14-17 under 35 USC §103(a) as being unpatentable over Prokoski et al., in view of Fung et al.

Claims 11, 12, and 14-17 depend from claim 1, which is discussed above with respect to Prokoski et al. Fung et al. disclose an image processing method and apparatus. Fung et al. do not overcome the deficiencies of Prokoski et al. in disclosing the features of claim 1, and therefore of claims 11, 12, and 14-17. That is, Fung et al. also are concerned with an identification determination based on a comparison of two images, not a determination of suitability of an image for use in identification, based on an evaluation of an image. Like the Prokoski et al. process, the Fung et al. process takes place

subsequent to the time during which the claimed method is useful, and Fung et al. do not disclose or suggest this pervious method.

Claims 11, 12, and 14-17 all deal with correction of an individual image. That is, if a suitability determination is made in which the image is found not to be suitable, correction is made to bring the image over the threshold of suitability. Contrary to the examiner's position, claim 11 recites determining whether a negatively evaluated image could fulfill the predetermined quality criteria after image correction; claim 12 recites a correction method for a digitized image of a person; claim 14 recites a data processor, adapted to execute a method according to claim 12; claim 15 recites data processor, adapted to execute a determination method according to claim 1 and to execute a correction method for a digitized image of a person; claim 16 recites a system for quality determination and correction of digitized images of persons; and claim 17 recites a system according to claim 16.

Multiple images may be processed, but multiple images are not used for comparison. Fung et al., in contrast, discuss searching a library of images for the best match against a target image. Fung et al. are concerned with finding a closest match from the library, and modifying the presentation of the target image or images in the library in order to make the best comparison determination. See column 4, lines 6-50. Fung et al. do not disclose or suggest comparison of a characteristic value against a general threshold to make a suitability determination, or correction of a reference image to make it more suitable for a later comparison to a second image.

For at least the reasons noted above, it is submitted that no combination of the teachings of Prokoski et al. and Fung et al. could render obvious the invention as recited in claims 11, 12, and 14-17. The rejection of claims 11, 12, and 14-17, therefore, should be withdrawn.

The examiner rejected claim 18 under 35 USC §103(a) as being unpatentable over Prokoski et al. '094, in view of Fung et al., and further in view of Prokoski et al. '435.

Claim 18 depends from claim 1, which is discussed above with respect to Prokoski et al. '094 and Fung et al. Prokoski et al. '435 disclose a dual-band biometric identification system. Prokoski et al. '435 is concerned with an identification match between two images, and do not overcome the deficiencies of Prokoski et al. '094 and Fung et al. as discussed above. It is therefore submitted that no combination of the teachings of Prokoski et al. '094, Fung et al., and Prokoski et al. '435 could render obvious the invention as recited in claim 18. The rejection of claim 18, therefore, should be withdrawn.

Based on the foregoing, it is submitted that all objections and rejections have been overcome. It is therefore requested that the Amendment be entered, the claims allowed, and the case passed to issue.

Respectfully submitted,

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Date

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